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ABSTRACT

This paper examines adult vocational education in the context of the current vocational education system. The first of four major sections defines and discusses the background of adult vocational education. In section 2, a typology of vocational education is presented, followed by a discussion of three funding categories as they relate to adult programs. These funding categories include (1) programs supported by public funds; (2) programs supported by private funds; and (3) programs that are cooperatively funded by local, state, federal, or private sources. In the third section, suggested models for designing a learning environment for adult vocational education are given. The final section examines selected adult populations with special needs for vocational education, including women, individuals with handicaps, and the disadvantaged. (CT)

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Information Series No. 226

TAILORING VOCATIONAL EDUCATION TO ADULT NEEDS

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The National Center for Research in Vocational Education
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1981

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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FOREWORD

The Educational Resources Information Center Clearinghouse on Adult, Career, and Vocational Education (ERIC/ACVE) is one of sixteen clearinghouses in a nationwide information system that is funded by the National Institute of Education. One of the functions of the Clearinghouse is to interpret the literature that is entered into the ERIC data base. This paper should be of particular interest to both vocational and adult education decision-makers and practitioners who are planning vocational programs for adults.

The profession is indebted to Norma Brewer for her scholarship in the preparation of this paper. Recognition is also due Florence F. Hood, Norfolk State University; Earl B. Russell, University of Illinois; and Catharine Warmbrod, the National Center for Research in Vocational Education, for their critical review of the manuscript prior to its final revision and publication. Susan Imel, Assistant Director at the ERIC Clearinghouse on Adult, Career, and Vocational Education, coordinated the publication's development.

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EXECUTIVE SUMMARY

This paper examines adult vocational education in the context of the current vocational education system. The first of four major sections defines and discusses the background of adult vocational education. In section 2, a typology of vocational education is presented, followed by a discussion of three funding categories as they relate to adult programs. These funding categories include (1) programs supported by public funds, (2) programs supported by private funds; and (3) programs that are cooperatively funded by local, state, federal, or private sources. In the third section, suggested models for designing a learning environment for adult vocational education are given. The final section examines selected adult populations with special needs for vocational education including women, individuals with handicaps, and the disadvantaged.

Literature relating to the topic of adult vocational education can be found in the ERIC system under the following descriptors: *Adults; *Adult Learning; *Adult Programs; *Adult Vocational Education; Educational Cooperation; Educational Environment; Educational Finance; Financial Support; Material Development; Models; Public School Adult Education. Asterisks indicate descriptors having particular relevance.

GROWTH AND DEVELOPMENT OF ADULT VOCATIONAL EDUCATION

Adult vocational education has been largely ignored by the field of education. The following passages depict its role within the educational system.

> The failure to make adult vocational education an integral part of the local community educational effort is due to a lack of vision as to the importance regarding the contribution that it can make to problems of unemployment and business and industrial stagnation. The time has come to see that the adult program is staffed, financed and designed to achieve its own unique missions for the adult and the community. (Bottoms 1979, p. 4)

> . . .Throughout history adult vocational education has been treated as a stepchild. Society has focused on youth education, and adult vocational education has been given second priority. (Kobe 1977, p. 5)

An educational system that is poorly equipped to reach the needs of adults has developed over the years. The system largely ignores the impact of the accelerating rate of change on the lives of adults. Because of the rapid rate of change, educational opportunities need to be made available to persons throughout their lives. Most adults are confronted with at least one of the following educational needs in terms of their occupations: (1) the need to update skills and knowledge in order to keep abreast of changes in their fields, and (2) the need to acquire new or additional skills and knowledge in order to change fields.

There are many critical questions with regard to adult education that need answering immediately. To what extent is vocational education prepared to assist and support the learning needs of adults? What, if anything, is vocational education doing now to serve adults? Which groups should vocational education be attempting to serve? This paper examines these questions in the context of the vocational education system. After defining and discussing the background of adult vocational education, some vocational education systems and programs designed for adults are described. Selected adult populations with special needs for vocational education are examined. The paper concludes with some recommendations for the future. Since adult vocational education is a vast topic, only an overview, rather than a comprehensive treatment, is presented.

What Is Adult Vocational Education?

An inclusive definition of adult vocational education is almost impossible to achieve. Virtually any type of learning situation or program in which adults participate is considered adult education. Likewise, any type of work-oriented class, workshop, or conference is considered vocational education. In an attempt to define the wide, diverse, and somewhat confusing field of vocational-technical education of adults, Venn (1970, p. 473) stated that:

> The vocational-technical education of adults is considered by many to be a process rather than a program--a process that involves the development of the individual for

social, economic and occupational competence. It is carried on in institutions, on the job, in formal and informal situations, and elsewhere. The activity that takes place in educational institutions is planned and organized and may be distinguished as a program. Such programs have as their objective either the preparation of the individual to enter an occupation or the upgrading or updating of the adult already employed. Adult vocational-technical education, therefore, may be classified as either preparatory or supplementary in nature.

Bottoms (1981) defined vocational education as a system that involves not only the adult as an individual, but the family and community as well. This system should strengthen an individual's ability to earn a living, a family's ability to sustain a decent life together, and a community's ability to thrive.

Earlier Bottoms (1979) suggested the need for a comprehensive view of vocational education for adults, one that includes two equally important dimensions. The first dimension would assist adults to make continual career choices, to prepare for a specific job, and to progress in their work environments in a socially responsible way. The second dimension would create a more favorable and stable community economic climate by focusing on training and service needs of employers. For purposes of this paper, adult vocational education will be defined as a process by which adults, as individuals, family members, and community participants, will prepare to enter an occupation, or upgrade or update a present one in order to benefit themselves, their families, and their communities.

What Has Been the Effect of Change on Adult Vocational Education?

With the advent of World War II, adults began to seek further education and training, a process that increased the awareness of the vocational education needs of adults. Before that time, education generally was considered to be the prerogative of the young. In the years since World War II, this trend of educating only youth has changed. Some of the reasons given include:

> The obsolescence of knowledge, the rapid growth of new knowledge, the shifts in national priorities, the multiplications and complexity of social problems, and the close relationship between the application of knowledge and social progress. . . . (Hesburg, Miller, and Wharton 1973, p. 3)

The vast increase in knowledge caused by both cultural and technological changes in American society is almost overwhelming. We are witnessing changes so profound and far-reaching that the mind can hardly grasp all the implications (Gardner 1965). Knowles (1970) explained that up to the early part of the twentieth century, the time span of major cultural change (such as massive inputs of new knowledge, vocational displacement, population mobility, and change in political and economic systems) required several generations, whereas in the twentieth century several cultural revolutions have already occurred and the pace is accelerating. According to Knowles, knowledge gained by the time a person is twenty-one becomes largely obsolete by the time that individual is forty; skills that make people productive in their twenties are becoming outmoded during their thirties. "Consequently, the adult years become years of creeping obsolescence in work, in play, in understanding of self, and in understanding the world" (Knowles 1970, p. 23). Cross (Cross, Valley and Associates 1974), commenting on the knowledge explosion as a fact of life, observed that every forty minutes enough new information is generated to fill a twenty-four volume encyclopedia and only 20 percent of jobs during the eighties will utilize knowledge learned in college.

Keeping up with the vast amount of information is a problem not only for the engineer or scientist, but for all of us. Culbertson (1974) described the shift in human resource requirements brought about by technological change as follows:

> Over a relatively few years, the advances of technology has created whole new industries—missiles, electronics, business machines, plastics, new forms of research. Brand new skills have been substituted for skills of traditional importance. Professional and technical employment rose 50 percent in the decade of the fifties and another 70 percent in the decade of the sixties—more than three times the rate of increase in total employment. New technology is squeezing the unskilled worker out of the labor market and putting a premium on ever more advanced training. Thousands of displaced workers must adjust to other industries and ocupations to earn their livelihood. (p.30)

Professions, as well as skill occupations, are recognizing the changes that are occurring within their own areas. Education is being called upon to alleviate or lessen the impact of these changes. Hechinger (1975) reported that the Minnesota Supreme Court ordered the state's lawyers either to go back to formal studies periodically or to get out of the practice of law. In addition to law, medicine is an obvious example of a profession experiencing constant change. Each year, the professional is inundated with an estmated two million pages of new literature and about 170,000 abstracts (Hechinger 1975). Hiemstra (1976) wrote that many professionals in health-related occupations must study constantly in order to remain proficient and keep their skills current.

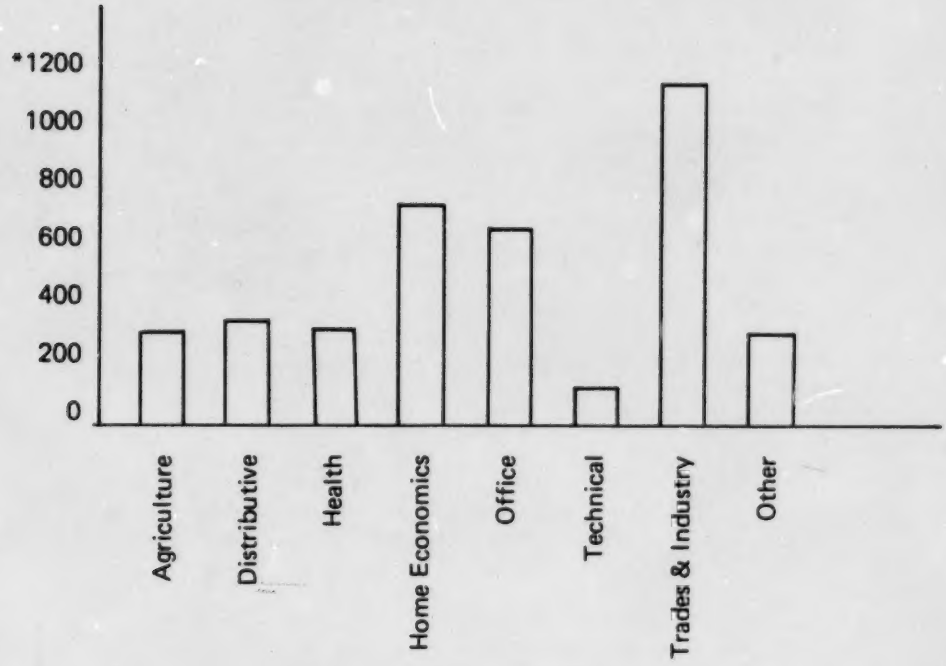
What Has Been the Effect of an Increasing Emphasis by Adults on Vocational Education?

Adults are participating in educational activities in ever increasing numbers. The accelerated pace of change, which outdates knowledge and skills and which provides adults with greater periods of leisure time, is also providing impetus for many adults to again resume their involvement with learning. Many adults are seeking additional schooling, particularly of an occupational, vocational, or technical nature (Golladay and Noell 1978). In 1975, for example, over 17 million adults aged seventeen and over who were not full-time students in high school or college enrolled in one or more adult education courses. Of those enrolled, almost half were in courses classified as occupational training. Between 1969 and 1975, the number of people taking occupationally oriented courses increased 43 percent while the overall increase of adult education participants during this period was only about 31 percent.

U.S. Office of Education program data show that almost four million participants were enrolled in adult vocational classes in 1976. Most of these participants attended school part time. In 1976, adult education programs enrolling the most students were the trades and industry (1,191,000), home economics (764,000), and office occupations (670,000) (Golladay and Noell 1978). (See Figure 1.) Bottoms (1979) reported that in 1978 only 4 percent of the labor force was served by vocational education. A major indicator of the need for expanding vocational programs is the growing number of adults aged twenty-five to forty-four; in 1978, there were 53.4 million persons in that age category as compared to a projected 70.6 million in 1985. Other factors highlighted by Bottoms as indicators for increased emphasis on vocational education include the following:

- Overcrowding in entry level positions

Figure 1
Enrollment in Federally Aided Adult Vocational Education Classes



*Enrollment in thousands

Source: (Golladay and Noell 1978, p. 157)

- Flight of business and industry from many of the nation's cities
- Changes in technology, materials, and processes essential to the United States' competitiveness in international trade
- An increase in the number of immigrants entering the United States
- A decline in the number of small businesses created during the seventies
- A decrease in the quality of family life as evidenced by a growing number of family-related social problems, such as child abuse and single parent families
- An increase in a number of special population groups such as under-employed and unemployed adults, displaced homemakers, and the elderly.

Vocational education programs designed for adults could be instrumental in alleviating these factors. Underemployed or unemployed adults, for example, could be trained or retrained to fill positions in the labor force. An expanded program of adult vocational home economics could focus on improving the quality of family life. Immigrants could be assimilated into the labor force through adult vocational education training programs, and the development of small business could be encouraged through training programs and technical assistance.

There is no escaping the increasingly complex nature of our society. Although this complexity is evidenced in all phases of life, it is particularly apparent in work environments. There is no denying the need for better informed and more highly trained individuals to perform in the labor market both now and in the future. Today, one out of ten workers is a college graduate, but by the year 2000 that number will have increased 50 percent and four out of ten workers will have had at least a year of higher education (Porteous 1977a). The jobs of the future will be increasingly technical and demand new skills; more education, therefore, will be required to hold them. Adult vocational education will be needed to prepare persons to enter these jobs as well as to assist in updating skills of persons currently in the work force.

ADULT VOCATIONAL EDUCATION PROGRAMS

The need for adult vocational education is well documented and there are some vocational education programs in existence that serve adults. In order to survey these programs, adult vocational education will be examined in terms of the existing vocational education system. A typology of vocational education will be presented, followed by a discussion of funding categories as they relate to adult programs.

Typology of Vocational Education

Evans (1981) divided vocational education into six types: (1) job-specific preparation, (2) occupational-specific education, (3) occupational area preparation, (4) employability, (5) prevocational guidance, and (6) prevocational basic education. The following description of the six types was offered by Evans (1981):

1. *Job-Specific Preparation.* These programs increase employability in a particular job with a particular employer. Examples: a program to train people for specified job classifications for a new company moving into town; a program designed for a police department to make its officers more effective; a sheltered workshop; an adult farmer program. Typical outcomes: attraction of industry, increased quality of goods and services, promotion to a better job, higher earnings.

2. *Occupational-Specific Preparation.* These programs increase employability in a particular occupation, but are not designed for a particular employer. Examples: programs to prepare licensed practical nurses, cosmetologists, bookkeepers, welders, or wildlife conservationists; related instruction for apprentices. Typical outcomes: better working conditions and job satisfaction, higher social status, increased opportunity for mobility, less unemployment.

3. *Occupational-Area Preparation.* These programs increase employability in a group of occupations which use similar knowledge, tools, materials or methods. Examples: building trades, printing, machine shop, medical careers, entrepreneurship, office occupations, horticulture, agribusiness and homemaking. Typical outcomes: better occupational choice, occupational and social mobility, improved ability to work with people in related occupations, improved access to on-the-job training (OJT).

4. *Employability Preparation.* These programs increase employability by developing work skills and attitudes which apply to any occupation. Examples of course titles: occupational survival skills, career exploration, assertiveness training, and work experience. Typical outcomes: greater success in work or OJT.

5. *Prevocational Guidance.* Through guidance activities students acquire introductory occupational knowledge and general information about a variety of work settings. Examples: industrial arts, career orientation, occupational guidance, occupational

assessment, job counseling for adults. Typical outcomes: better educational and occupational decision making, increased career and self-awareness, lower school dropout rates.

6. *Prevocational Basic Education.* Many students require basic prevocational skills before they are ready for enrollment in occupational training or other work-related activities. Examples: functional or occupational literacy courses; English for those whose English is limited; reading or arithmetic or communications or work readiness classes taught in conjunction with skill training; General Education Development programs. Typical outcomes: entry into an occupational education class or OJT; greater success in occupational training which is taken concurrently with basic skill training (p. 31-32).

Although Evans is describing general vocational education, his typology applies to programs serving adults. The first four types, for example, draw a substantial part of their enrollment from adults who are currently employed and who (1) desire to work more effectively in their present employment, (2) seek promotion, or (3) seek job or occupational changes. The sixth type, prevocational basic education, also serves a number of adult students who are deficient in basic skills needed to perform a variety of jobs. The growing number of adults seeking career information is an indication of the need to provide adult prevocational guidance, the fifth type mentioned by Evans. Included in this category would be displaced homemakers entering or reentering the job market following an extended absence as well as adults making career changes.

Funding Categories for Adult Vocational Programs

The six types of programs discussed above generally fall into one of three funding categories: (1) programs supported by public funds; (2) programs supported by private funds; and (3) programs which are cooperatively funded by local, state, federal, or private sources.

Programs Supported by Public Funds

Vocational education received initial federal support with the passage of the Morrill Act of 1862. The Act designated that public lands be donated to the several states and territories to provide colleges for the benefit of agriculture and mechanical arts (Gillie 1973). The Smith-Lever Act, passed in 1914, provided aid in the diffusion of information related to agriculture and mechanical arts. The passage of the Smith-Hughes Act in 1946 legislated that local-state-federal programs of vocational and technical education be funded by grants-in-aid to the states to encourage and support vocational training (Venn 1970). The legislation specified that the occupational categories of agriculture, home economics, and trade and industrial education were to receive partial reimbursement of federal funds. Distributive occupations were added in 1917 when the George-Dean Act became law. Additional federal legislation through the years provided for other occupational categories to be funded and for the expansion of the funding to include social services and activities. The 1968 legislation, for instance, provided funds for such activities as cooperative education programs, training for the disadvantaged and handicapped of all ages, consumer and homemaking education, residential schools, and guidance.

The programs of vocational-technical education aided by federal legislation are the largest component of the nation's organized efforts to reduce unemployment and eliminate occupational shortages (Venn 1970). U.S. Office of Education program data show that almost 2.2 million

students were enrolled in federally aided postsecondary vocational classes in the fiscal year 1976, an increase of over 250 percent from 1968. Most of these students attended school full time and had no break in their schooling. In contrast, almost 4 million participants were enrolled in adult vocational education classes in 1976, an increase of about 33 percent from 1968. Most of these participants attended school part-time (Golladay and Noell 1978).

Another contributor to the vocational training of adults is the Comprehensive Employment and Training Act (CETA) of 1973, which has had a substantial impact on programs for adults. In some states, the percentage of human resources training provided through CETA is equal to that of the public school programs, and it is an important and viable delivery system.

CETA focuses almost exclusively on the unemployed, underemployed, and economically disadvantaged. Although vocational education serves the disadvantaged, its main duty is to serve all persons in all communities. Vocational education is the responsibility of state agencies and local boards of education, while CETA represents a modified block grant-revenue sharing approach applied directly at the local level. The primary decision making is in the hands of public officials such as the mayor and county boards. There are few restrictions placed on the types of expenditures for which CETA funds may be spent, whereas vocational funds are prescribed explicitly by law. CETA-funded programs measure success by the creation of jobs and the initial placement of trainees in them. Vocational education is usually characterized by long-term training, due to the belief that many of today's skills cannot be acquired in a short time, and that successful job placement, retention, and advancement in the job are key measures of success.

Other examples of publicly funded programs that have been important components of adult vocational education are apprenticeship programs and training programs provided by the armed forces. State and local programs partially funded by the federal government, however, remain the major permanent endeavors for preparing entrants to the labor force and improving the productivity of those at work producing goods and services (Venn 1970).

Programs Supported by Private Funds

Private profit and nonprofit schools, home study courses, and business and industry training programs are a few examples of privately funded schools that provide programs for adults. In 1975-76 there were 8,605 noncollegiate postsecondary schools with occupational programs. These schools tend to be relatively small institutions specializing in specific fields. The greatest number of these schools offer cosmetology/barbering, flight, and vocational/ technical programs. About 88.5 percent of noncollegiate postsecondary schools are private. Since 1973-74 the number of private schools decreased about 4 percent, while the number of public schools increased by 11 percent (Golladay and Noell 1978).

The 1980-81 *Directory of Accredited Home Study Schools* includes the names and addresses of more than eighty accredited correspondence schools, plus a partial listing of the subjects, ranging from accounting to zookeeping. Training programs, course work, and subject matter vary from program to program. Because many adults have short-term goals, diverse knowledge levels, and variability in skills, home study courses offer them a viable option for training programs.

Private learning corporations and vocational schools have much to offer the adult who is learning new or additional types of job skills. The unique features of private vocational schools

include such things as classes of varying lengths offered with and without academic credit; objectives specifically directed toward occupational preparation with little consideration for general education; flexible entrance requirements; program planning utilizing behavioral objectives; and flexibility that allows courses and programs to be instituted in very short time periods (Gillie 1973).

Many adults are being trained on the job by business and industry. This practice agrees with the observation that the curricula of educational institutions lag behind progress in technology and other facets of the business-industrial community (Gillie 1973). During 1975, the nation's 7,500 or so largest private employers (those with 500 or more employees), spent over $2 billion for employee education, and at least one out of eight of the 32 million employees of these firms took part in some formal, on-the-job education or training under company sponsorship (Lusterman 1978). The corporate education system has three characteristics that set it apart from the more traditional systems: (1) there is unusually high motivation on the part of the participant; (2) the work place is the setting for both the learning and the doing; and (3) it has a pragmatic orientation. Corporate education is concerned with achieving limited and specific ends in the most economical and efficient way. American corporations are becoming a significant subsystem of the nation's educational system.

With the rapid change in technology, the business community will continue to provide educational programs for its employees. It remains to be seen whether or not formal educational institutions will be able to cut through bureaucratic red tape in order to challenge this growing subsystem of education within business and industry. Perhaps education and industry will be able to communicate their needs, desires, and talents well enough so that each will be able to view cooperatively this new opportunity for joint participation in the advancement of the vocational needs of the adult population.

Programs that are Cooperatively Funded

Efforts are under way in many vocational-technical schools, community colleges, and colleges and universities to cooperate with business and industry in employee education. One such program is a cooperative venture between Northwestern State University (NSU) and Riley-Beaird, Inc. of Shreveport, Louisiana to provide in-plant training and education to both current and prospective workers. The co-op program offers associate degrees in metals technology, welding technology, and drafting technology; and bachelor's and master's degrees in industrial technology. The program has been so successful that plans are being finalized to make the co-op program an integral part of the Riley-Beaird employee advancement program (Dennis 1978).

Suburban Hennepin County Technical Center, one of the largest vocational-technical schools in Minnesota, has implemented a new program that centers on establishing more vocational courses at the industry site, providing in-house, inservice courses for employers. According to the coordinator, approximately forty individual courses were presented at some twenty area business locations, providing upgrading and retraining for about 600 individuals who otherwise might never have received any vocational training *(Superintendent's Annual Report 1980)*.

A project was conducted by the National Center for Research in Vocational Education to identify, study, and disseminate information about cooperative industry and state administered adult education programs (Winkfield, Granger, and Moore 1975). As a result of the project, over 100 cooperative adult education programs were identified as models for future collaborative efforts.

SUGGESTED MODELS FOR DESIGNING A LEARNING ENVIRONMENT FOR ADULT VOCATIONAL EDUCATION

Programming for adults has sometimes been accomplished in a rather haphazard manner, characterized more by expediency than by planning. According to Kasworm (1980), most adult education activities have focused on short-term goals, often not by conscious design, but because of extremely diverse clientele, their overwhelming need for immediate intervention, their significant variability in skills and knowledge levels, and their intermittent participation. Adult programs have also been characterized by programmatic discontinuity, minimal resources, limited staff development, and limited research.

Knowles (1977) believed that in order to design a program for adults, a new technology for the education of adults developed by adult education theorists in Europe and America should be used. This technology has been given the name "andragogy," which is based on the Greek word *aner* (with the stem andr-), meaning "man." Andragogy is, therefore, the art and science of helping adults learn. Knowles believed that using the andragogical approach is beneficial to both adults, children, and youth. Andragogy is based on the following four assumptions about the characteristics of adult learners: (1) as people mature their self-concept moves from one of being a dependent personality to a self-directing human being; (2) as a growing reservoir of experience is accumulated, this experience becomes an increasing resource of learning; (3) as the readiness to learn increases, learning is oriented toward the developmental tasks of social roles; and (4) as the time perspective changes from one of postponed application to one of immediate application, orientation toward learning shifts from one of subject centeredness to one of problem centeredness (Knowles 1970).

If one chooses to apply the technology of andragogy to designing a learning environment for adult vocational education, then the implication for appropriate curriculum design is clear. Adults want programs that are designed to deal with their immediate problems, that are organized to fit their own special time frame, that employ adult-oriented materials, and that utilize the knowledge that they have already accumulated. The next four sections contain information about programs and curriculum which have been found appropriate for use with adult vocational education learners. They are:

1. Teaching Material Developed by Vocational-Technical Education Consortium of States (V-TECS)
2. PAVE System for Use with V-TECS Catalogs
3. Infusion of Life Skills into Adult Vocational Education
4. A Model School for Adults in Vocational Education.

A Model for Designing Teaching Materials

While organized programs designed for the adult population have been the exception rather than the rule, there have been some developments that show promise for the future of adult vocational education. In 1972, an educational consortium of southern states for accountability was formed under the auspices of the Southern Association of Colleges and Schools for the sole purpose of developing catalogs of performance objectives for many occupational areas. The name given to this consortium was Vocational-Technical Education Consortium of States (V-TECS).

Along with developing catalogs of performance-based objectives, V-TECS identified criterion-referenced measures and assembled performance guides for these objectives. Competency-based education and performance-based education are used as interchangable terms in the model developed by the V-TECS (Hirst 1977). The following goals were listed: (1) to promote performance-based instruction by providing instructors in vocational education with a firm foundation of valid curriculum content based on data-based research; (2) to reduce duplication of effort across the member states; (3) to share research and development costs; (4) to improve content validity of vocational-technical programs; and (5) to improve overall accountability in vocational education.

Each catalog is composed of a series of tasks that the learner will be expected to perform on the job, and each task contains a performance objective, criterion-referenced measure, and a performance guide. The following example is from the catalog for floriculture workers (Morrill and Hunter 1976, p. 28).

DUTY: PROPAGATION AND PLANTING OF PLANTS

TASK: Transplant seedlings or cuttings

---

22. **PERFORMANCE OBJECTIVE:**

Given seedlings or cuttings, the desired spacing intervals, growing medium, and appropriate sterile containers, transplant seedlings or cuttings. Cuttings must be handled with care and transplanted in the sterile containers in such a way that the survival rate will be at least 98 percent.

CRITERION-REFERENCED MEASURE:

Instructor will provide seedlings or cuttings, growing medium and containers. Transplant the seedling or cutting.

PERFORMANCE GUIDE:

1. Identify the cuttings or seedlings to be transplanted.
2. Fill the sterile container with medium.
3. Using the thumb, forefinger or stick, make holes in the medium into which the seedlings or cuttings are to be transplanted.
4. Transplant the seedlings or cuttings, making sure that there is good contact between the roots and stems with the planting medium. *Caution:* Seedlings or cuttings should not be transplanted at too great a depth, they should be placed at the same depth they were growing initially.

A V-TECS catalog might be composed of 150 tasks or as few as 50, depending on the occupational area. Some of the occupational areas for which tasks have been developed are auto mechanics, auto body, welding, carpentry, horticulture, and radio-television repair. Eighty-six catalogs have been developed by the consortium members and an additional forty-two are in process or are being planned for the future.*

While materials developed by this consortium were not designed with only the adult population in mind, the nature and content of the material lends itself easily to individualization. Hence, these resources are useful in developing a program of instruction specifically intended for the adult who will use it.

PAVE System-design for Utilization of V-TECS Catalogs

Although V-TECS catalogs give direction to a vocational instructor, they do not suggest teaching methods or how to infuse the V-TECS material into ongoing classroom instruction in a systematic manner. The use of V-TECS must be accompanied by inservice training of teachers. Merely to give a copy of an auto mechanics catalog to an instructor and not couple it with "how to use it skills," is a waste of an excellent teaching resource.

In 1976, the Alabama State Department of Education received a federal grant to design and implement a research-based system for the utilization of the V-TECS catalogs for adult vocational education. The Performance-Based Adult Vocational Education (PAVE) Project was based on the premise that it is impossible to predetermine or prearrange learning activities for the adult, for each is a unique individual who comes to the learning situation with a variety of experiences and many different needs.

Some adult vocational instructors have little planning time for developing teaching techniques for their adult classes. In Alabama, vocational education served adults and out-of-school youths, depending on the funding availability and the number of vocational instructors willing to get involved with adult education. In only a few of the areas was there any overall planning on a continuous basis, and then it generally only occurred in the large, populated areas where a minimum of personnel, time, and promotional effort led to a minimum enrollment. This resulted in the same courses being offered constantly and few new ones being conducted.

In 1973, when more promotional emphasis was being placed on adult vocational education, two problem areas, in addition to the lack of instructor time for developing course content, were identified in Alabama. The first was inadequate assessment of student competencies. No program was available that adequately assessed the competencies of prospective students. The second problem was curriculum content. There were no curricula available that trained adults to perform specified competencies on the job. A program was needed which would offer relevant, job-oriented instructional content and provide for effective assessment of learner competencies. In addition, the program needed to be adaptive to any occupational area and flexible enough to serve a variety of individual adult learner needs.

*Ronald D. McCage, Director of the Vocational-Technical Education Consortium of States, Atlanta, GA. Personal Interview, May 1981.

With these needs as a basis, the PAVE Project was formulated with the following purposes: to develop an adult vocational education competency-based program using a research-based instructional systems design; and to assess the application of the competency-based research products being developed by the Vocational-Technical Education Consortium of States in the development of adult vocational education programs.

The objectives of the project were as follows:

1. Design a model for implementing competency-based adult vocational education including (a) administrative procedures for implementing competency-based programs; (b) procedures for assessing learner competencies; (c) procedures for identifying learner needs; (d) procedures for prescribing learner activities; (e) procedures for assessing competencies acquired; and (f) procedures for certifying student competencies.

2. Develop a plan for training adult vocational instructors in developing and using competency-based instruction including (a) criteria for identifying candidates for training; (b) performance standards and criterion levels for each segment of instructional systems development; and (c) trainee reference materials.

3. Train ten adult vocational instructors to criterion levels of performance in competency-based instruction (a) to demonstrate proficiency at established criterion levels for each segment of the instructional system; (b) to be experienced in competency-based adult vocational education; and (c) to be experienced in the development of competency-related teaching materials from catalogs of performance objectives.

4. Implement competency-based instruction in forty adult vocational classes. The instructional program of each class was (a) to be occupationally related; (b) to have a minimum enrollment of ten adults; (c) to be designed from catalogs of performance objectives developed from occupational analysis research; (d) to assess the learner competencies of each student; (e) to identify the learner needs of each student; (f) to prescribe learner activities for each student; and (g) to assess the competencies acquired by each student.

5. Complete an evaluation study of the effects of using competency-based instruction in adult vocational education. The evaluation report was to present the results of an experimental study that (a) tested three delivery systems; (b) provided for replication; and (c) measured student performance and teacher attitude.

As a result of the PAVE Project, the use of certain V-TECS catalogs was found to be successful in adult vocational classes when the instructors received appropriate inservice training. The PAVE System, a systematic approach for skill training, was developed with a PAVE guide that led both the instructor and learner step-by-step through the process. (Patterson, Humphries and Spivey 1978).

Infusion of APL Life Skills into Vocational Education

A second project funded by the Alabama State Department of Education and implemented by the Department of Vocational and Adult Education at Auburn University was the Competency-Based Adult Vocational Education (CBAVE) project. This project, utilizing V-TECS catalogs and the Adult Performance Level (APL) study, attempted to tie a systematic method of designing

curriculum material to the appropriate life skills needed by the adult vocational education student (Compentency-Based Adult Vocational Education Project 1978). A model for instruction of adults based on infusion of appropriate life skills into vocational education adult training programs was developed. The infusion process is defined as the incorporation of APL functional competencies or life skills into existing vocational instructional objectives.

The central objective of the APL project, completed in 1972, was to specify functional competencies or life skills that are needed in order to achieve economic and educational success in today's society. Five general knowledge areas of life skills were identified: consumer economics, government and law, community resources, health, and occupational knowledge. Five skill areas were also identified: reading, writing, speaking and listening, problem solving, and computation.

Results of the APL study indicated that there are many functionally incompetent persons in the United States. One out of five adults was shown to lack skills and knowledge needed to function effectively in society, while one-third functioned with difficulty. This study was the first attempt to delineate what knowledge and skills were directly related to the American measures of success—levels of income, education, and occupational status. The APL findings have obvious implications for adult vocational programs. One implied assumption is that adults who lack the necessary knowledge and skills identified by this study are among those who are unemployed or have low-level jobs. Many adults who need job skills also need to acquire life skills or functional competencies.

The rationale for the infusion of the life skills into vocational education was that learning is accomplished more quickly and efficiently when specific needs are identified. Letter writing, for example, was taught in an auto mechanics class when it became apparent that equipment and supplies would have to be ordered from a catalog. Letter writing, a life skill listed in the APL knowledge area of consumer economics, is a skill not usually taught in an auto mechanics class.

Twelve adult vocational instructors in seven different vocational areas participated in the CBAVE project, tested the model, and developed instructional plans for the infusion process. All of the instructors who participated in the project were pleased with the results. All reported that they planned to continue the infusion of APL functional competencies or life skills into their vocational curriculum for future classes. Some of them have infused APL life skills with the technical instruction in their daytime classes. These decisions to extend the concept of infusion to other classes were based on the learners' responses to the relevance of APL skills. The instructors reported high interest in APL and believed that it contributed to the learners' motivation (Brewer 1980).

A Model Learning Environment for Adult Vocational Education

The 916 Area Vo-Tech School in Minneapolis, opened in 1972, has an open-entry/open-exit, year-round personalized vocational-technical instruction system. It now serves approximately 5,500 adults in part-time and extension programs and another 1,800 in full-time postsecondary programs. It also serves seniors on a shared time basis from the district's fourteen high schools. The facility operates twelve months of the year and houses 1,400 training stations, used nearly every day by some 3,500 different persons.

When the instructional program for the new facility was being planned in 1970, the following goals were identified:

1. A strong commitment to secondary as well as post-secondary education. For purposes of efficiency, it was felt that students should not have to repeat courses teaching skills and knowledge already acquired elsewhere.

2. A strong commitment to the disadvantaged and handicapped. Assurance was needed that handicapped and disadvantaged students would have access to programs without long delays, so they could function in vocational training and complete program segments leading to employability.

3. A strong commitment to accountability and efficiency. Schools were to be used year round and for as many hours daily as needed.

4. A strong commitment to open entry. No student would be denied the right to enter and try an occupational training program.

Competency-based vocational education was the learning model used by the program planners because it was the only model available that met the goals set by the 916 board of education. The advantages to this model were:

1. The learners progress at their own best rate to a mastery of the instructional content.

2. Learners learn in their own preferred learning style, build confidence through success in learning, and often speed up their learning.

3. Learners, rather than competing, will often help others and peer assistance is optimized.

4. Learners perform as managers of learning instead of information dispensers.

There are fifty-five competency-based training programs. A total of 5,800 job tasks have been defined; 5,800 terminal performance objectives and 23,000 learning objectives have been written; and 5,800 learning guides have been developed, including individualized print and audiovisual learning materials, and performance and knowledge criterion tests (Knaak 1977). The 916 Area Vo-Tech School serves as a model for many schools throughout the country. The basic goals of the school are compatible with Knowles' andragogical theory of adult learning, which utilizes motivation and self-direction of the adult in order to design and implement an environment in which adults learn.

SELECTED ADULT POPULATIONS

Although a majority of the employed adult population are candidates for vocational education, several clearly defined groups have been singled out for special attention because of federal legislation affecting them. These groups include women, individuals with handicaps, and the disadvantaged. Older Americans, who currently receive few federal dollars for the purposes of employment training, will become a future target group because of their increasing numbers and changes in the retirement age.

Women

Forces influencing women to enter a learning situation, whether in postsecondary education or public or private vocational schools, are numerous. Some women need to develop a marketable skill and find employment either to supplement the family income or to support the entire family. For those whose children are grown, there is a need for an activity to fill the leisure hours. For those who are employed in low-level jobs, there is a need to acquire additional knowledge, skills, or a degree (Agin and Prather 1977). An additional influencing force is a change in attitude: women today expect to work and men are coming to expect it as well (Bomboy 1979).

In the summer of 1978, women reached a milestone: for the first time more than half of all American women over age sixteen were participating in the labor force. The actual numbers of working women have more than doubled since 1950. By 1990, it has been projected that almost half of all workers will be women, with more than 70 percent of all women working; these statistics are in contrast to those of 1900 when only 20 percent of all women worked outside the home. The typical American family with father working and mother at home with two children now constitutes only 7 percent of all families (Bomboy 1979).

Despite the Equal Pay Act of 1963, women have continued to experience a gap between what they earned and what men earned. In 1955 women earned 64 cents for every $1.00 earned by men; in 1975 that gap had widened by four cents to 60 cents for every $1.00 earned by men. Because of the large numbers of women entering the labor force, many have been shuttled into low-paying entry level jobs in clerical or service industries. The jobs that most women hold are those that have the least prospect for advancement or are most likely to become obsolete in the near future. Women have made some advances into management positions and into the professions. The gains are slower in the nonprofessional and skilled craft area, although here, too, change is occurring. In 1977 women were apprenticed in nearly half of all apprenticeable occupations with the percentage increasing from .7 percent in 1973 to about 2 percent today (Bomboy 1979).

There are programs which attempt to deal with the multitude of issues related to assisting, training, and counseling women who wish to enter the labor force. The government has supported a number of projects for women under the Comprehensive Employment and Training Act (CETA). A priority group addressed by CETA is the displaced homemaker. Displaced

homemakers are women, thirty-five to sixty-four years of age, who have spent the majority of their adult lives as homemakers dependent upon the income of a husband, but due to the loss of the husband's income—generally through death, divorce, or desertion—they find themselves in the position of having to support themselves. It is difficult to determine the exact number of displaced homemakers due to lack of data, but it is estimated that they number in the millions. The need for career awareness is imperative for a displaced homemaker. Hood (1980) proposed a futures model program that would enable such women to assess and enhance their personal employment potential as well as to assist them in developing career readiness skills that could lead to training for related unsubsidized employment.

Mintz developed a recruitment model for the purpose of mitigating artificial or real barriers that deter women from entering male-oriented occupational education programs. The model involved two areas: (1) a recruitment package to be used to open and maintain communication channels that inform women of occupational areas ouside "the female ghetto," and (2) a forum where women could learn about and investigate educational programs in the traditionally male-oriented occupations, evaluate what they had learned, seek further information, obtain reinforcement, and finally, make a commitment to enrollment in a program (Porteous 1977b).

Both Mintz and Hood are focusing on middle-age women as this group is particularly disadvantaged in terms of job skills. Mintz found that older women are the hardest hit when attempting to enter or reenter the labor market (Porteous 1977b). Green and Enderline (1980) wrote that if learning to cope is difficult for aging men, it is even more difficult for aging women. Women must cope with the problem of job skills from a doubly disadvantaged position: that of their sex as well as their age.

Disadvantaged and Handicapped

The Vocational Education Amendments of 1976 (Title II, P.L. 94-482) require that states spend a designated part of their vocational education grant on programs for the disadvantaged and handicapped. The 1976 Amendments specified that 20 percent of these funds be designated for disadvantaged and 10 percent be set aside for handicapped. These monies were to be matched by state and local funds. The Amendments also themselves require that vocational programs for handicapped students must be consistent with the state plan requirements of P.L. 94-142 (The Education for All Handicapped Children Act of 1975). This Act covers persons from ages three to twenty-one and is designed to provide free and appropriate public education, including special education and related services, to meet the unique needs of these students. Special education is defined to include vocational education if it consists of instruction that meets the needs of handicapped students. The Act further defines vocational education by referring to the definition in the Vocational Education Amendments: organized educational programs that are directly related to the preparation of individuals for paid or unpaid employment or for additional preparation for a career requiring other than a baccalaureate or advanced degree.

The Rehabilitation Act of 1973, Sections 503 and 504, emphasize the rights of handicapped people and is every bit as powerful as the Civil Rights Act of 1964. Section 503 deals with affirmative action guidelines for employers and is important to vocational educators involved in placement of handicapped persons. Section 504 is a mandate to end discrimination on the basis of a handicap, and to bring handicapped persons into the mainstream of American life (Tindall 1978).

The failure of American education to deliver vocational education successfully to the disadvantaged is well known to educator and legislator alike (Jensen 1977). Although monies were set aside in the Vocational Education Acts, and the U.S. Office of Education declared equal access and opportunity a national priority, large numbers of disadvantaged persons remain largely untouched by vocational education. Studies show that the majority of these persons live in the urban areas of America and that unemployment in these areas is unusually high.

The 1979 Vocational Education Civil Rights Survey revealed that handicapped adults in vocational education number only 2.3 percent or 10,006 of the 435,146 adults enrolled in vocational programs (Hoyt 1981). Although the Vocational Education Amendments of 1976 and the Education for All Handicapped Children Act are concerned with individuals aged three to twenty-one, little effort has been expended thus far to provide vocational education for handicapped adults. Vocational rehabilitation has provided health care and some vocational education, but for the majority of handicapped adults in our nation, vocational educational opportunities remain untapped.

Older Americans

By the year 2000 there will be more grandparents than children in the western world and more pensioners than teenagers. America will be a nation of older adults. Despite what most persons believe, older Americans are not a homogenous population. Although the social, economic, and cultural backgrounds and the mental and physical capabilities of the elderly may differ more widely than those of younger population groups, there are several problems that become more pronounced with age including income, health, transportation, community involvement, housing, taxes, recreation, protection services, preretirement planning, and employment. Retirement is a particularly traumatic event for the individual who has worked for a lifetime. To suddenly be handed a gold watch and told to go home and relax can be a demoralizing event, one to which it is difficult to adjust. Society does not yet accord retirement the positive values that it does work. Instead, there is a tendency to view retirement as a benchmark signifying declining physical and mental prowess and impending death (Porteous 1977b).

Three options for the retirement years, according to Metropoulos (1978) are disengagement, continued engagement, or reengagement. Disengagement is a life style in which an individual is relatively uninvolved with society as a whole; it may encompass a wide variety of options depending upon the health, personality, and socio-economic environment of the person who selects the option. Although disengagement can offer immense personal satisfaction and can be rewarding after a life of hard work, the option to disengage may not be acceptable and some individuals will prefer to continue to work either in their same occupation or in a new career. To remain engaged in work after normal retirement age is reached generally requires planning, and this planning is a step better taken prior to the time when retirement or alternatives must be confronted. If those facing retirement do opt to become active or involved in a different form than they were before, they are, in fact, becoming reengaged.

Youmans (1973) predicts that in the future older persons will depend more on public assistance and on themselves and their resources. An aging subculture, providing social and psychological support and forming stronger pressure groups, will develop as a result of the needs of the elderly. It is likely that this subculture will demand more productive roles in the work force.

Sheppard recommended that training and retraining for older Americans be a concern of future vocational education legislation. In addition, he recommended that short-term training programs in specialized skills, utilizing the experience and expertise of older persons to work with young adults and youths be developed (Porteous 1977b). There are several programs already in existence that provide training and work opportunities for older adults. These programs include the areas of child care, peer counseling, health care, education, and community service. Through these programs older adults may serve as foster grandparents, disseminators of legal, social, and consumer information, senior companions, and hospital aides (DeCrow 1978). Expansion of this type of programming is needed, however, if the work and social needs of the elderly are to be adequately met.

SUMMARY

Since World War II, adults have been seeking further education and training in increasing numbers. The primary cause for this expanded interest has been the vast increase in knowledge caused by both cultural and technical changes. Other contemporary factors contributing to an increased emphasis on adult vocational education include (1) the growing number of adults ages twenty-five to forty-four; (2) the shift in business and industry from many of the nation's cities; (3) the increasing number of immigrants entering the United States; and (4) the increasing number of special population groups such as underemployed and unemployed adults, displaced homemakers, and older adults.

Adult education within the current vocational education system can generally be categorized into six types: (1) job-specific preparation; (2) occupation-specific education; (3) occupational area preparation; (4) employability; (5) prevocational guidance; and (6) prevocational basic education. These six types of programs generally fall into one of three funding categories: programs supported by public funds; programs supported by private funds; and programs that are cooperatively funded by local, state, federal, or private sources.

Adults want programs that are designed to deal with their immediate problems, that are organized to fit their own special time frame, that employ adult-oriented materials, that are adult oriented, and that utilize the knowledge that they have already accumulated. While organized programs designed specifically for the adult population have been the exception rather than the rule, there have been some developments that are adaptable to the adult vocational education situation.

One of these developments has been the Vocational Technical Education Consortium of States (V-TECS). This group of states has developed catalogs of performance-based objectives, criterion-referenced measures, and performance guides for many occupational areas. While the materials developed by this consortium were not designed with only the adult population in mind, the nature and content of the material lend themselves easily to individualization. Hence, these resources are useful in developing a program of instruction specifically intended for the adult who will use it. The Alabama State Department of Education designed a system for the utilization of the V-TECS catalogs for adult vocational education. As a result of this project, the use of certain V-TECS catalogs was found to be successful in adult vocational classes when the instructors received appropriate inservice training in their use.

Although a majority of the employed adult population are candidates for vocational education, several clearly defined groups have been singled out for special attention because of federal legislation affecting them. These groups include women, individuals with handicaps, and the disadvantaged. Older Americans, who currently receive few federal dollars for the purpose of employment training, will become a future target group because of their increasing numbers and because of changes in the retirement age.

Recommendations

Based on information presented in this paper, certain recommendations are made that could be utilized by educational designers in planning future vocational programs for adults.

- More women are seeking vocational courses due to the need to expand their roles by acquiring marketable skills, or the desire to prepare for a job change or to increase job-related responsibilities. Those in business, industry and education must be sensitive to the needs of women and to the forces that limit their growth and capability. They must actively promote, recruit, and train women so that they may move into the mainstream of American economic life.

- The inability to provide those who are disadvantaged and handicapped with adequate vocational training has resulted in a lack of jobs for that population as well as an attendant loss of revenue that those jobs would have provided. The psychological and resource loss of these groups is almost impossible to calculate. We must make available for all citizens an opportunity to support themselves and their families to the full extent of their abilities.

- Older Americans, rather than being shuttled out of the mainstream of American life through retirement, must be encouraged to remain productive for as long as each desires. It is worth the effort to help all citizens develop their potential, if for no other reason than the increase in productivity that this abundant potential can accomplish.

- Programs, based on the andragogical approach, should be further developed and implemented by designers of vocational education for adults. Some of the additional services or programs needed by adults are comprehensive assessment services, programs designed for specific companies, linkages between organizations, portable buildings and equipment, itinerant teaching positions, industry-based teachers, stipends for students, support services, rehabilitation services, and general education development classes.

- Exemplary projects that have proven to be effective and efficient for adults should be used in future-designed adult vocational programs. Instead of allowing programs to develop without design or thought, efforts such as the PAVE Project that utilized the research-based V-Tecs catalogs could be replicated in other adult vocational educational programs. Replicated projects would provide for a better utilization of funds.

- Federal legislation and funding should be continued for women, the disadvantaged, and the handicapped and additional legislation and funding should be provided for evolving groups such as older Americans, the growing immigrant population, and youths who failed to make the transition from school to work.

- The philosophical base for vocational education must continue to expand in order to accommodate adults whether their needs are job entry, job updating, job maintenance, or job change. Vocational education must make provisions for short-term as well as long-term training and assistance in whatever situation its expertise is needed.

- Pell described a final goal which is sometimes overlooked or forgotten in today's busy world:

> We must prepare men and women both for the world of ideas and work, for their vocation and avocation. The two are inseparable . . .so we must resolve to educate the whole world person for a profitable and rewarding life. In doing this, we will accomplish more than has ever been accomplished before (Porteous 1977a, p. 25).

In the decade of the eighties, many changes will occur which will result in the further refinement of adult vocational education. Perhaps different categories of adults will emerge as national priorities are examined and funding patterns change. Programs will be developed to accomodate the changes that will occur, affecting both teaching materials and methods. One thing will remain constant in this developing area of education: adult needs will continue to change and adults will continue to adapt to change through education. The hope is that adults will be welcomed and encouraged to seek, through vocational education, solutions to the problems they encounter. Vocational education must continue to serve the needs of the individual, the family, and the community if it is to fulfill its role and responsibility to the growth and development of America.

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